Land and Water Boards of the Mackenzie Valley

LAND USE PERMIT APPLICATION FORM

Subsection 19(2) and Schedule 2 of the Mackenzie Valley Land Use Regulations

Use an "X" to indicate which Board the Application is being made to:	Mackenzie Valley Land and Water Board:		Sahtu Land and Water Board:	
	Wek'èezhìı Land and Water Board:	X	Gwich'in Land and Water Board:	

To complete this Form, please refer to the LWB *Guide to the Land Use Permitting Process* (Guide) and fill in the grey fields; attach additional pages, as necessary. Indicate N/A in the grey fields for Items or parts of Items that are not applicable. An application package checklist is provided in the Guide. Review the following LWB guidance for formatting your Application Package:

- *Document Submission Standards*
- *Standard Outline for Management Plans*

If applicable, provide the existing or current Land Use Permit file number:	W2016J0008		
Use an "X" to indicate if this Application is accompanied by an Application for a Water Licence:	Water Licence – in a non-federal area:		
	Water Licence – in a federal area:		

1. NAME AND CONTACT INFORMATION – APPLICANT

Project Name:	Tundra Ecosystem Research Station		
Applicant's Name:	Heather Sayine-Crawford		
Position:	Director, Wildlife Management Division		
Company Name:	Environment and Climate Change, Government of the Northwest Territories		
Mailing Address:	PO Box 1320		
Community:	Yellowknife	Telephone:	867-767-9237 ext.53230
Prov/Terr:	NT	Email:	Heather_Sayine-Crawford@gov.nt.ca
Postal Code:	X1A 2L9	Other:	

2. NAME AND CONTACT INFORMATION – APPLICANT'S HEAD OFFICE

Include a Certificate of Corporate Registration from the Government of the Northwest Territories in your Application Package.

Use an "X" to indicate this information is the same as Item 1 above:			
Name:	X		
Position:	X		
Company Name:	X		
Mailing Address:	X		
Community:	X		
Prov/Terr:	X	Telephone:	X
Postal Code:	X	Email:	X
Field Supervisor:	X	Other:	X

3. NAME AND CONTACT INFORMATION – CONTRACTORS AND SUB-CONTRACTORS

Include relevant names, responsibilities, and contact information. An additional table should be added for each contractor and sub-contractor.

Name:	n/a		
Position:	n/a		
Company Name:	n/a		
Mailing Address:	n/a		
Community:	n/a	Telephone:	n/a
Prov/Terr:	n/a	Email:	n/a
Postal Code:	n/a	Other:	n/a

	Use an "X" to indicate that contractor and/or subcontractor information is not available at this time.

4. LOCATION OF ACTIVITIES

Use the grey fields below to provide or reference the following information:

Traditional Place Name: Yamba Lake (Yabah ti)

Maps and Geographic Information System (GIS) Data: Include a map in your Application Package identifying local geographic features, watercourses and water sources, project structures, and location(s) of any proposed waste deposits. Provide geographic coordinates (latitude and longitude) of project features, and the maximum and minimum project boundary in degrees, minutes, seconds, or decimal degrees. Include GIS data in your Application Package, if applicable. Refer to the LWB *Geospatial Data Submission Standards* for providing geographic information.

Minimum latitude:	64°52'0.05"	Maximum latitude:	64°52' 4.0"
Minimum longitude:	111°25' 29.9"	Maximum longitude:	111° 35' 41"

NTS Map Sheet No.: Provide the map sheet number: 76D/13

GIS Data: Use an "X" to indicate if GIS data is attached.	Attached:		Not Available:	X

Land Types: Use an "X" to indicate the type(s) of the land on which the activities are proposed:

Free Hold/ Private:		Commissioner's/ Territorial Lands:	X	Federal Land:		Municipal Land:	

5. ELIGIBILITY

Refer to section 18 of the Mackenzie Valley Land Use Regulations. Use an "X" to indicate which one applies:

18(a)(i):		18(a)(ii):		18(a)(iii):		18(b): X	

6. RIGHTS AND/OR CONTRACTS TO SUPPORT ELIGIBILITY

Contact Indigenous, federal, and territorial governments, and other parties to ensure all appropriate rights, authorizations, permissions, dispositions, and contracts have been obtained or are in the process of being obtained (e.g., mineral exploration rights, quarry permits, licences of occupation, leases, access agreements and authorizations, etc.). List and provide confirmation of other authorizations that relate to the proposed activities; reference these in your Application Package (e.g., rights, permits, licences, etc.).

The Government of the Northwest Territories has operated the Tundra Ecosystem Research Station at Daring Lake since 1994. Reserve status was granted the GNWT in 1994 by INAC (GNWT Reserve 76D/13-1).

Research permits are held for all TERS users who carry out environmental and other research-based activities from the Station. Wildlife Research Permits are issued by Wildlife Management Division, ECC, GNWT and NWT Research permits form the Aurora Research Institute.

7. PERMIT TYPE AND CRITERIA

Refer to sections 4 and 5 of the Mackenzie Valley Land Use Regulations. Use an "X" to indicate which permitting criteria apply:

Type A				Type B				Type C	
4(a)(i):		4(b)(i):		5(a)(i):		5(b)(i):		(SLWB and WLWB only):	
4(a)(ii):		4(b)(ii):	X	5(a)(ii):		5(b)(ii):			
4(a)(iii):		4(b)(iii):		5(a)(iii):	X				
4(a)(iv):		4(b)(iv):		5(a)(iv):					
4(a)(v):				5(a)(v):					
				5(a)(vi):					

8. PROJECT DESCRIPTION

Include a project description in your Application Package, or for small-scale projects, describe the proposed activities in the grey field provided below. For each and all proposed water uses, include the name and type (e.g., lake, river) of water source(s), and the purpose and quantity of water to be used (rates, volumes (m^3/day)). Indicate the total number of hectares to be used in each phase of the project, as well as through the life of the project.

The purpose of the Tundra Ecosystem Research Station (TERS) is to promote and support scientific research in the sub-arctic, in addition to providing educational programs for northern residents. The Station was designed as a state-of -the-art facility incorporating the latest technologies and best practices in power generation (i.e. solar and wind), wildlife deterrents and waste management. The camp compound encompasses approximately 0.5 hectares of land.

Research and monitoring activities focus on the following priority areas: climate change, impacts of industrial development, wildlife disease and contaminants, species at risk, and ecosystem processes. Research activities generally take place within 5 km of the research station and contribute to pan-territorial monitoring programs such as: small mammal, arctic hare, raptors, breeding bird surveys, water quality and water quantity Researchers from ECC also participate in the International Tundra Experiment, a circumpolar study examining the effects of climate change on plant phenology, growth and reproduction. In addition, there are several university research groups that use the TERS facilities on an ongoing basis from Queens, Carlton, Trent and Wilfred Laurier universities.

The GNWT runs the Tundra Science and Culture Camp at the Daring Lake facility. This is a 10-day cross-cultural environmental education program for high school students from the North and South Slave regions of the Northwest Territories.

9. CAMP

Describe the proposed camp size and layout. Indicate the number of person-days; explain, with rationale, any variations in the number of people that may be on site over the life of the project.

The Tundra Ecosystem Research Station is a small camp that has been designed to be environmentally friendly. It is comprised of 10 Weatherhaven tents. While number of people on site varies between 2 and 35 there are approximately 6 people in camp at any time. Person days range from 700 – 900 during the season of operation from May 1st to September 8th.

Use of solar power as the main power source, use of an incinerating toilet, grey-water sump, etc. and responsible storage of fuels all result in minimal short-term impacts on the environment in the Daring Lake area.

An electric bear fence circles the living area of the Research Station to discourage human/animal interaction and all station users must have completed a bear safety course prior to using the facilities.

Wildlife monitoring has shown that caribou do not avoid the Daring Lake area in response to the Station's presence; large carnivores (wolverine, grizzly bears) are regularly sighted in the vicinity of the camp but have never interacted in any way with the camp (i.e. they do not exhibit behaviours that indicate they are attracted or habituated to the camp). The use of boardwalks in the fenced-in compound and on the tundra (near research sites) in high use areas are designed to minimize damage to local vegetation.

10. ROADS AND ACCESSES

Provide detailed information about the construction, location, and decommissioning of any roads and accesses.

Use an "X" to indicate if this is to be a pioneered road or access:	Yes		Use an "X" to indicate if the route has been laid out or ground-truthed:	Yes	
	No	X		No	

11. PROPOSED WASTE MANAGEMENT METHODS

Use the grey fields below to provide or reference the following information:

Waste Management Plan: Include a Waste Management Plan in your Application Package, if applicable, or for small-scale projects, describe the proposed waste management activities in the grey fields provided below. A template for the Plan can be found in the LWB *Guidelines for Developing a Waste Management Plan*.

Waste Type	Management Method(s)
Garbage:	See attached Waste Management Plan
Sewage (Sanitary and greywater):	See attached Waste Management Plan
Brush and trees:	n/a
Overburden (Organic soils, waste material, etc.):	n/a
Other (describe):	n/a

Off-site Disposal: If waste is proposed to be disposed of off-site within the NWT, written confirmation (e.g., an email, letter, etc.) from the facility/facilities indicating they will accept the waste is required. Include it/these in your Application Package. Please note this information will be required by the Board prior to commencement of activities.

12. EQUIPMENT

Identify the types of equipment proposed to be used.

Number	Type/Description	Size (weight in tonnes)	Proposed use
4	Polaris / Skidoo snowmobiles	550cc	Transport field personnel and equipment
4	Yamaha outboard motor	4 stroke (15hp, 20 hp and 25hp) 2 stroke (20 hp)	Transport field personnel and equipment, data collection
1	Gas water pump	5 hp	Filling water tank
2	Gas generators	4500 watt and 2500 watt	Recharging batteries
1	Yamaha ATV	450cc	Transport of equipment

13. FUEL

Identify all fuel types proposed to be used.

Type of Fuel	Number of containers	Capacity of containers (e.g., litres, pounds)	Type of container (e.g., barrel, tank, tidy-tank)	Proposed storage or staging location(s)
Diesel:	6	205l	drum	Fuel storage area with berm
Gasoline:	6	205l	drum	Fuel storage area with berm
Aviation Fuel:	18	205l	drum	Fuel storage area with berm
Propane:	12	45kg	tank	Within camp compound
Other: (describe)				

14. METHODS OF FUEL TRANSFER

Describe the proposed methods to transfer fuel.

Fuel is transferred by use of manual fuel pumps from drums into jerry cans using fuel spill pads to catch any drips.

15. SPILL CONTINGENCY PLAN

Include a Spill Contingency Plan in your Application Package, if applicable, or for small-scale projects, provide relevant details in the grey field provided below. An example of this Plan can be found in the INAC *Guidelines for Spill Contingency Planning*.

See attached.

16. PROPOSED PROJECT SCHEDULE AND TERM

Indicate the proposed project start and completion dates and the time of year the project activities are planned to occur. Describe any anticipated temporary closure(s) or seasonal shutdowns. Indicate the term requested.

Start Date:	November 2023	Completion Date:	November 2028
Activities occur during the spring and summer, beginning of May through to beginning of September, annually.			
Term of Permit Requested:		Five - year	

17. POTENTIAL ENVIRONMENTAL IMPACTS OF THE PROJECT AND PROPOSED MITIGATIONS

If the proposed project, or parts of the proposed project, may be exempt from preliminary screening, describe the rationale for the exemption in the grey field below. Include the date of the most recent screening, and/or the environmental assessment or impact review number.

Unless the project could be exempt from preliminary screening, using the Impact-Mitigation Table below, or the more detailed Table in Appendix D of the Guide, identify all potential impacts and possible mitigations that are relevant to the proposed project, and indicate whether any of the mitigation measures have been developed as a result of input from affected parties. Possible potential impacts are listed below; however, these lists are not exhaustive and may not apply to all projects. All information provided should reflect the size, scale, and nature of the proposed project. Cumulative impacts and climate change must be considered. Attach additional pages if needed. Use landscape orientation if preferred.

Potential Impacts *Use an "X" to indicate which apply*	**X**	**Potential Project Impacts and Proposed Mitigations** *Describe the potential impact(s) and the proposed measure(s) to reduce each of these impacts.*
ABIOTIC COMPONENTS		
Land		
Soil contamination		
Soil compaction		

Destabilization/erosion		
Change in soil structure		
Inability to support vegetation		
Other		
Water		
Groundwater		
Water table alteration		
Infiltration changes		
Changes in water quality		
Temperature changes		
Other		
Permafrost		
Loss or change in extent		
Changes in seasonal fluctuations		
Change in persistence		
Other		
Surface Water		
Water flow or level changes (permanent, temporary, seasonal)		
Drainage pattern changes		
Temperature changes		
Changes in water quality		

Potential Impacts *Use an "X" to indicate which apply*	**X**	**Potential Project Impacts and Proposed Mitigations** *Describe the potential impact(s) and the proposed measure(s) to reduce each of these impacts.*
Wetland impairment		
Changes to aquatic habitat (see Biotic section below)		
Other		
Air		
Changes in air quality		
Harm to living things		
Increased greenhouse gases		
Other		
BIOTIC COMPONENTS		
Vegetation		
Direct loss of vegetation	X	The footprint of the camp and walking trails / boardwalks out to research locations results in some minimal vegetation loss. Research at the station relies on maintaining intact ecosystems so we aim to have very little disturbance
Loss of Species at Risk or may-be-at-risk plants		
Change in species composition		
Introduction of non-native (invasive) species		
Effects on plant health (dust, metals, toxins)		
Increased risk of fire		
Compaction of vegetation	X	The footprint of the camp and walking trails / boardwalks out to research locations results in some compaction of vegetation. Research at the station relies on maintaining intact ecosystems so we aim to have very little disturbance
Other		
Terrestrial Wildlife Habitat		
Direct loss or removal of habitat, dens, or nests	X	The footprint of the camp results in a very minimal amount of direct habitat loss. Research at the station relies on maintaining intact ecosystems so we aim to have very little disturbance
Loss or removal of keystone species and/or Species at Risk habitat		
Fragmentation of wildlife corridor		
Direct injury or mortality		
Disturbances to key lifecycle stages: breeding, feeding, nesting, staging		
Effects on population abundance		
Change in species diversity		
Effects on wildlife health (toxins, metals, etc.)		
Changes to migratory movement patterns		
Changes to predator-prey relationships		
Human-wildlife conflicts	X	It is possible to have human-wildlife conflict but in our 25+ years of operations we have not had any serious incidents
Other		

Aquatic Habitat		
Breeding disturbances		
Change in species diversity		
Effects on health (toxins, metals, sediment, etc.)		
Changes to migratory movement patterns		
Changes to predator-prey relationships		
Effects on population abundance		
Change in species diversity		
Other		

CULTURAL COMPONENTS

Potential Impacts *Use an "X" to indicate which apply*	**X**	**Potential Project Impacts and Proposed Mitigations** *Describe the potential impact(s) and the proposed measure(s) to reduce each of these impacts.*
Wildlife Harvesting		
Loss or reduction in game species populations		
Effects on traditional land use, subsistence, and harvesting rights		
Other		
Cultural Integrity and Heritage Resources		
Change to or loss of cultural integrity		
Change to or loss of traditional lifestyle		
Change to or loss of heritage resource		
Other		
Social and Economic Well-being		
Increased human health hazard and risk		
Economic opportunities or losses (employment, training)		
Change in ecological, cultural, social, or economic values identified for protection in approved Land Use Plans		
Impairment of the recreational or traditional uses of the land or water		
Impairment of the aesthetic quality of the land or water		
Changes to the use of the area by other non-Indigenous people (e.g., trappers, outfitters, residents, hunters, forest harvesters, other authorized projects)		
Other		

18. CLOSURE AND RECLAMATION

Use the grey field below to provide or reference the following information:

Closure and Reclamation Plan: Include a Closure and Reclamation Plan in the Application Package, if applicable, or for small-scale projects, describe the proposed closure and reclamation activities in the grey field provided below. Describe any temporary closure(s) and seasonal shutdowns. Please also refer to the LWB/AANDC *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories*.

Closure Cost Estimate: Prepare a Closure Cost Estimate and include it in your Application Package. Applicants are encouraged to contact Board staff, prior to applying, to determine which closure-cost-estimate template is most suited to the activities being applied for. Guidance is provided in section 2.2 of the LWB/GNWT/CIRNAC *Guidelines for Closure and Reclamation Cost Estimates for Mines*. If the Application is submitted concurrently with a Water Licence Application, the estimate should include a breakdown of water- and land-related activities and liabilities.

The TERS is a long-term facility; there are no foreseeable plans for closure. Back hauls are used to regularly remove unused items, and/or garbage. Should the facility close, all buildings would be dismantled and removed from the site. The grey- water pit would be filled in and restored to a natural state.

19. ADDITIONAL SUPPORTING INFORMATION

Use the grey field below to provide or reference the following information:

Engagement: Conduct engagement, prepare an Engagement Record and Engagement Plan in accordance with the LWB *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits*, and include them in your Application Package. Templates are provided in the Guidelines. Please also refer to *Information for Proponents on MVLWB's Engagement Requirements*.

Land Use Plans: Contact the applicable Land Use Planning Board or the Tłı̨chǫ Government for assistance in interpreting the requirements of the relevant land use plan(s). Include a Land Use Plan Conformity Table, or if applicable, written confirmation of conformity from the Tłı̨chǫ Government, in your Application Package, demonstrating how the project meets the requirements of the Land Use Plan, if applicable.

Traditional Knowledge (TK): Provision of TK is mandatory for applications to the SLWB. Other applicants are strongly encouraged to include TK.

Studies Undertaken to Date: List any relevant studies that support the proposed activities and include them in your Application Package.

The Tundra Ecosystem Research Station has facilitated research over the past 28 years contributing to the body of knowledge related to climate change, vegetation, water and wildlife interactions in the low arctic ecozone. More than 70 academic articles have been published as a result and many research collaborations are ongoing. The Tundra Science and Culture Camp received a Premier's award for Collaboration in 2011 and has continued to deliver an important cross-cultural program to northern students in partnership with Tłı̨chǫ elders and cultural team.

20. FEES

Refer to the Guide for assistance in determining relevant fees.

Type of Fee	Amount ($)
Application fee (if applicable):	$150
Land-use fees (for federal areas only):	$
Total Fees:	$

If fees are submitted separately, indicate how and when they will be delivered to the Board's office.

21. SIGNATURE

Heather Sayine-Crawford, Director	Wildlife Management Division Environment and Climate Change Government of the Northwest Territories
Applicant's Name (print) or Company Name	Position (print)

Signature	Date

Review the application package checklist provided in the Guide, and submit completed applications to the Regulatory Manager or Executive Director identified on the "Contact Us" pages of the respective Land and Water Board (www.mvlwb.com, www.wlwb.ca, www.slwb.com, www.glwb.com).